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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,384	01/22/2004	Jui-Kung Wu	3624-0148P	2427

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EXAMINER
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KOSLOW, CAROL M

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/761,384

Applicant(s)

WU ET AL.

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10, 13 and 16 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 6-9, 12, 14, 15, 17 and 19-23 is/are rejected.
- 7) ☒ Claim(s) 3, 5, 8 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1/22/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

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The Taiwan references cited in the Information Disclosure Statement of 22 January 2004 have been considered with respect to the provided English abstracts.

The disclosure is objected to because of the following informalities: "Salt" on page 13, line 19 is misspelled. Me should be silicon, not silicone. Silicone is a mistranslation. Appropriate correction is required.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: There is no teaching of the subject matter of the claims 6, 8, 12, 14, 16, 19 and 21. There is no teaching in the specification that the processes can be used to produce the formula of claims 6, 12 and 19. There is no teaching of reduction gas in general. The wording in the specification implies the reducing gas is limited to  $H_2(8\%)/N_2(92\%)$ . There is no teaching in the specification that the chelating agent is any organic compound that releases at least one of inflammable gas and reducing gas when decomposed by heating. The specification only teaches the chelating agent is urea or ammonium organic salts that release at least one of inflammable gas and reducing gas when decomposed by heating.

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered second claim 20 been renumbered 21. Claims 3, 5, 11 and 18 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to

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further limit the subject matter of a previous claim. Applicant is required to cancel the claims.

The claims are to the exciting light source that has emits radiation in the range of 430-490 nm for exciting the material and thus the claims are unrelated to the material itself.

Claims 8, 14 and 21 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims teach the reducing gas reduced the Re ion, while the specification teaches the gas reduces the cerium ion (pg. 7, lines 20-22; pg. 9, lines 8-10 and pg. 11, lines 1-2). In addition, it teaches that exposing the sintered material to a reducing gas, while the specification teaches reheating the material in a reducing gas at 1200°C for 12 hours. These discrepancies need to corrected.

Claims 2, 6, 8, 9, 12, 14, 15, 19, 21 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2, 6, 12, and 19 are indefinite since silicone would not substitute for aluminum as claimed. Silicone is a mistranslation and Me should be silicon. In addition, the phrase that Me is added or substituted is indefinite since the formula clearly shows it is substituted in the formula. It is suggested to delete "that is added or substituted". Finally, these claims are improperly dependent on claims 1, 4, 10 and 17 since they are to a different material. Claims 2, 6, 12 and 19 should be rewritten as independent claims or

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rewritten to state aluminum is substituted with up to 20 at% silicon. Claims 8, 14 and 21 are indefinite since teach to expose the sintered material to a reducing gas to reduce the Re or Ce ion. Simply exposing the sintered material to a reducing gas at room temperature, as claimed, will not affect the ion states of any of the ions in the garnet. Claims 9, 15 and 22 recites the limitation "the reducing gas". There is insufficient antecedent basis for this limitation in the claims or in claims from which they depend.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4, 6, 8, 12-14, 16-20 and 22 of copending Application No. 10/711,002. Although the conflicting claims are not identical, they are not patentably distinct from each other because the LED in the copending patent contains phosphors having the formula  $Tb_{3-x-y}Ce_xRe_yAl_5O_{12}$ , where x has the same definition as for x in the formula in the claims in this application, y overlaps the definition as for y in the formula in the claims in this application and the definition

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for Re includes all the elements claimed in this application except vanadium. Thus the claims in the copending application suggest the claimed phosphor.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 1 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 74 (49)-3631.

The abstract for this reference teaches a phosphor having the formula  $(Tb_{1-x}Y_x)Al_5O_{12}:yCe$ , where  $0 < x < 0.6$  and  $0 < y \leq 0.3$ . This formula can be rewritten as  $Tb_{3-x'y}Ce_yY_xAl_5O_{12}$ , where  $0 < x < 1.8$  and  $0 < y \leq 0.3$ . This formula falls within that claimed.

Claims 1, 4 and 7 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by U.S. patent 6,669,866.

Example 1 in U.S. patent 6,669,866 teaches  $Y_{0.87}Tb_{2.01}Ce_{0.12}Al_5O_{12}$ . This formula falls within the claimed formula. The taught phosphor is produced by mixing oxides of Tb, Al, Ce and Y, calcining the mixture, sintering the calcined material and grinding the sintered material. This is the claimed process.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patents 6,669,866 and 6,552,487.

Both of these references teach phosphors whose formulas overlap that claimed and suggest the claimed process. U.S. patent 6,552,487 teaches a phosphor having the formula  $(\text{Re}_{1-x-y}\text{Pr}_x\text{Ce}_y)_3\text{B}_5\text{O}_{12}$ , where Re can be Tb,  $0.00001 < x < 0.05$ ,  $0.01 < y < 0.2$  and B can be Al and/or Ga. Thus the reference suggests  $(\text{Tb}_{1-x-y}\text{Pr}_x\text{Ce}_y)_3\text{Al}_5\text{O}_{12}$ . The x and y ranges fall with the claimed ranges. U.S. patent 6,669,866 teaches a phosphor having the formula  $(\text{Tb}_{1-x-y}\text{RE}_x\text{Ce}_y)_3\text{B}_5\text{O}_{12}$ , where Re can be Y, Gd and/or Lu,  $0 \leq x < 0.5-y$ ,  $0 < y < 0.1$  and B can be Al and/or Ga. Thus the reference suggests  $(\text{Tb}_{1-x-y}\text{RE}_x\text{Ce}_y)_3\text{Al}_5\text{O}_{12}$ . The y range falls with the claimed ranges and the x range overlaps the claimed range. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). Both references teach the phosphors are produced by mixing oxides of Tb, Al, Ce and Y, calcining the mixture, sintering the calcined material and grinding the sintered material. The references suggest the claimed phosphor and process.

Claims 1, 4, 7, 17, 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patents 6,596,195 and 6,765,237.

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Both of these references teach phosphors whose formulas overlap that claimed and suggest the claimed processes. U.S. patents 6,596,195 and 6,765,237 teach phosphors which can the formula  $(Tb_{1-x-y}A_xCe_y)_3Al_5O_{12}$ , where A can be Y, Gd or Sm, x is 0-0.5 and y is 0-0.2. The taught ranges overlap the claimed ranges. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The taught phosphor can be produced by mixing oxides of Tb, Al, Ce and A, calcining the mixture, sintering the calcined material and grinding the sintered material or mixing and dissolving compounds of Tb, Al, Ce and A, adding a base, stirring to form a precipitant, heating the precipitant, calcining the heated precipitant, sintering the calcined material and grinding the sintered material. The compounds can be nitrates, sulfates, acetates, citrates or chlorates and the base can be alkanolamines, which are capable of reacting with a metal ion chelate to form a gel. The references suggest the claimed phosphor and processes.

Claims 10, 13 and 16 are allowable over the cited art of record.

Claims 2, 6 and 19 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 12 and 15 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, second paragraph, set forth in this Office action

There is no teaching or suggestion in the cited art of record of a phosphor having the formula of claims 2, 6, 12 and 19.



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There is no teaching or suggestion in the cited art of record of forming a terbium aluminum garnet having the claimed formula by mixing a dissolving a mixture of a terbium compound, an aluminum compound, a cerium compound and a Re compound, heating the dissolved mixture, chelating the heated mixture, heating the chelated mixture, sintering the heated chelated mixture and grinding the sintered mixture.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk  
March 11, 2005

  
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Primary Examiner  
Tech. Center 1700